SECTION C – DESCRIPTION/SPECIFICATION

STATEMENT OF WORK

1.0 INTRODUCTION

The Naval Surface Warfare Center Carderock Division Detachment Norfolk (NSWCCDDN) is a full spectrum research, development, test and evaluation, engineering, logistics, and technical support center for all types of combatant craft, boats and watercraft for the Department of Defense and maritime community. The Combatant Craft Department has been tasked to develop initiatives for the integration of Command and Control, Computers, Communications, Intelligence, Surveillance, and Reconnaissance (C4ISR) to strengthen communications between the diverse platforms. These initiatives include development and testing of systems, reductions in maintenance expenditures and increased equipment availability while maintaining the operational survivability of watercraft. The customer base for NSWCCDDN services includes the US Navy, the Special Operations Command, the US Army, the US Marine Corps, the US Coast Guard and the maritime community.

2.0 SCOPE

The contractor shall provide engineering, technical, and logistic support services required to develop, integrate, and maintain technological improvements in the area of Command and Control, Computers, Communications, Intelligence, Surveillance, and Reconnaissance (C4ISR) in support of watercraft and combatant craft in their assigned missions. This will include the implementation and execution of advanced technology development and future maintenance concepts and strategies being developed and conducted by NSWCCDDN. The contractor shall provide a quick response capability meeting unplanned/unscheduled needs in the support of urgent or emergent requirements. The performance of these services may be required at government facilities, operational sites, or forward-deployed sites. The contractor shall be capable of supporting efforts nationwide and worldwide. Work performed under this contract will be under the cognizance of the NSWC, Carderock Division, Detachment Norfolk, Combatant Craft Department (Code 23), 116 Lake View Parkway, Suite 200, Suffolk, Virginia 23435-2698.

The contractor shall provide program management, electrical and electronics engineering, technical and logistics support for the implementation, execution, and prototype development of C4ISR systems for vessel and boat systems on combatant craft, boats and watercraft and other surface and submersible vessels and vehicles (herein referred to as vessels). The types of systems to be supported under this contract are RADAR, SONAR, Satellite Communications, Line-of-Sight Communications, Tactical and Consolidated Cryptology equipment, Information Warfare (IW) and Signal Intelligence (SIGINT), computer and display systems, engineering maintenance and control systems, and information and tactical LAN/WAN systems. The contractor, under the direction of NSWCCDDN and as specified in each Delivery Order, shall furnish the material, services, and facilities (except those furnished by the government under the expressed provisions of the contract) necessary for the accomplishment of the work. Work performed under this contract will include:

- Planning and Program Management Support
- Systems Engineering
- Test and Evaluation Support
- Installation and Technical Support
- Integrated Logistics Support
- System/Equipment Configuration Management Support

3.0 GENERAL REQUIREMENTS

3.1 TASK A - PLANNING AND PROGRAM MANAGEMENT SUPPORT

The contractor shall provide Program and Project Management support to NSWCCDDN on various C4ISR programs and/or projects. The contractor shall provide support in identifying and coordinating all items of work, and assure that all efforts are directed toward providing the most effective and cost efficient support services. Specific efforts under this task include the following:

3.1.1 Prepare drafts of top level planning documents including Operational Requirements Documents (ORDs), Mission Needs Statements (MNS), Program Management Plans and prepare inputs to and conduct reviews of top-level planning documents that direct or guide the efforts of C4ISR engineering.

3.1.2 Conduct craft and system threat assessments and provide recommendations**.** This includes determining craft susceptibility to adverse actions and recommending corrective action in areas of design and/or operational conditions, which will increase craft's, crew's, and systems survivability. Corrective action can include minimization techniques in profiles, signatures, etc which will reduce the threat's ability of detection of craft and its onboard systems.

3.1.3 Prepare management reports to include a monthly Progress and Status report objectives in accordance with DD Form 1423, CDRL, Data Item Number A001. Assist in establishing goals, milestones, program plans and policy including business plans, long and short range Plan of Action and Milestones (POA&M) and implementation and execution strategies in support of program.

3.1.4 Prepare technical reports to include system and/or equipment readiness and identify degradation trends in accordance with DD Form 1423, CDRL, Data Item Number A006. Recommend appropriate steps to redesign the systems/component responsible for the degradation or make changes to the current maintenance plan or logistic support requirements, which includes the development of appropriate documentation such as Engineering Change Proposal (ECP) and/or Field Change Proposal (FCP).

3.1.5 Provide financial management support including analysis of program planning and other financial planning documentation with respect to budget submissions, spend plans, work plans, and obligation targets and thresholds. Perform cost benefit analysis, risk assessments, market surveys, and budget requirements. Develop spreadsheets and briefing forms appropriate for the analysis and presentation of information and provide reports of findings and recommendations in accordance with DD Form 1423, CDRL, Data Item Number A005.

3.1.6 Attend C4ISR Program-related meetings and conferences, and program reviews on behalf of C4ISR initiatives and provide reports in accordance with DD Form 1423, CDRL, Data Item Number A002. When required the contractor shall develop a recommended agenda and establish a system to track action items, identifying problems/ issues, and produce meeting information in accordance with DD Form 1423, CDRL, Data Item Number A007, data and minutes.

3.1.7 Draft integrated test plans that delineate all developmental testing, periodic testing, inspections, and other system condition assessment methodologies in accordance with DD Form 1423, CDRL, Data Item Number A010.

3.1.8 Develop Acquisition Plans, Integrated Logistics Support Plans (ILSPs), Navy Training Systems Plans (NTSPs), Computer Resources Life Cycle Management Plans (CRLCMP), Integrated Test Plans and Return on Investment (ROI), C4I Support Plan (C4ISP), and studies for the pilot/lead vessel of a class.

3.2 TASK B - SYSTEMS ENGINEERING

The contractor shall provide systems engineering support to assist in the effective application of scientific and engineering efforts to transform validated operational needs into thoroughly defined system configurations through a documented process of requirements definition, functional analysis, synthesis, optimization, design, test and evaluation. Areas of particular involvement may include:

3.2.1 Perform independent analysis and technical studies and provide technical services in the area of systems engineering support. This may require drawings, alteration documentation, design history, parts validations, calculations, and reports in accordance with DD Form 1423, CDRL, Data Item Number A006.

3.2.2 Conduct system feasibility analysis during conceptual design phase including the definition of top-level system requirements through trade-off analysis.

3.2.3 Develop system operational and maintenance requirements during the system conceptual design phase.

3.2.4 Develop System Specifications comprising complete system technical requirements.

3.2.5 Develop Systems Engineering Master Plans (SEMP) and Test and Evaluation Master Plans (TEMP).

3.2.6 Conduct the functional analysis and the allocation of system level requirements to include the preparation of system level functional flow diagrams when required for complex systems implementations.

3.2.7 Participate in formal design reviews including the conceptual, system, hardware/software, and critical design reviews.

3.2.8 Provide management and coordination support for configuration management activities associated with C4ISR systems.

3.2.9 Design and support a knowledge base to support diagnostic analysis engines.

3.2.10 Perform Failure Modes and Effects Analysis.

3.2.11 Develop installation plans for improvements.

3.2.12 Develop/maintain Naval Warfare Tactical Database (NWTDB) compliant signal databases for condition assessment and monitoring systems. Database products must meet DoD/Navy interoperability standards and use DoD standard data elements and metadata schemes.

3.2.13 Perform independent engineering analysis to assess the threat and vulnerability effects on systems/components.

3.2.14 Recommend and perform/support redesign, modification, or alteration of hardware and software for system integration and improvements.

3.2.15 Develop new standard job procedures, maintenance procedures, and calibration techniques.

3.3 TASK C - TEST AND EVALUATION SUPPORT

The contractor shall provide test and evaluation support to NSWC,CD,DN on various C4ISR programs and/or projects. Testing and evaluation shall include technical as well as operational analysis and may include the following:

3.3.1 Support designated craft C4ISR tests, trials, and evaluations as tasked. Test and evaluation may be required to support C4ISR installations or may be independent of installation/integration efforts. Test and evaluation support may be required in sustaining prototype development efforts, analysis of fielded systems and assessment of emerging technologies. Some types of testing may include:

- ? Maintenance demonstrations;
- ? Reliability testing;
- ? Software Beta testing;

- ? Supportability testing;
- ? Independent verification and validation
- ? System Operational and Verification Testing

3.3.2 Develop procedures for conducting test and evaluation and perform all functions necessary to successfully complete test planning and associated documentation. This includes identification of test procedures, objectives and thresholds to be achieved, identification of support resources required to conduct the test, identifying evaluation methods, test reporting, procedure, failure feedback mechanism and test scheduling.

3.3.3 Develop/review test data in accordance with DD Form 1423, CDRL, Data Item Number A014, plans in accordance with DD Form 1423, CDRL, Data Item Number A010, and reports which may include Test and Evaluation Master Plans, Technical Evaluations, and other performance tests and procedures in accordance with DD Form 1423, CDRL, Data Item Number A011.

3.3.4 Conduct testing, analyze the results of collected data, including failure or other feedback reports, apply appropriate evaluation techniques, identify trends, make conclusions and recommendations.

3.3.5 Provide test support to locate test sites, acquire or assist in acquiring access test site(s), setting up instrumentation, sensors, test ranges, etc., and provide logistical resources. Logistical resource support may include personnel to perform pre-test training, maintenance of instrumentation during data collection, test performance, location and acquisition of spare parts, maintenance of instrumentation, hardware, and software, transportation, trial support, and related functions.

3.4 TASK D - INSTALLATION AND TECHNICAL SUPPORT

The contractor shall provide installation and technical support to NSWC,CD,DN on various C4ISR programs and/or projects. Support may include conducting installations, technical assists, and evaluations as outlined in the following:

3.4.1 Provide project management, engineering, technical, installation and coordination services to support fixed and carry-on C4ISR systems equipment, technology insertion and modification programs. This support includes generation of alteration documentation, installation drawings in accordance with DD Form 1423, CDRL, Data Item Number A008, technical documentation, and tracking documentation throughout the alteration process and completion reports in accordance with DD Form 1423, CDRL, Data Item Number A003.

3.4.2 Support coordination, scheduling and tracking for installations of fixed and carry-on C4ISR systems and equipment. This support shall include: creating and maintaining a database for scheduling systems and related programs; generating and coordinating craft availability scheduling requirements, attending meeting/conferences, and providing long-range planning.

3.4.3 Monitor proposed hardware and software changes and provide assessment of the impact to the installation process. Support may include the development of cost and performance data required for the installation of systems or equipment and related Fleet Modernization Program (FMP) documentation.

3.4.4 Conduct craft visits to design layout plans for installation.

3.4.5 Provide support to AIT installation teams as it affects the site survey, craft check, installation and certification in accordance with DD Form 1423, CDRL, Data Item Number A014. This effort includes the development and review of installation support documentation in accordance with DD Form 1423, CDRL, Data Item Number A015, preparing project plans, correspondence, letters, memoranda, reports, and supporting liaison among various coordinators, planners and executioners of alterations and installations.

3.4.6 Provide material and equipment procurement support and services to facilitate the development and implementation of alterations. This includes procurement through the Federal Stock System. The contractor shall

use best value procedures to acquire material and equipment and provide material status reports in accordance with DD Form 1423, CDRL, Data Item Number A004. Commercial-off-the-shelf (COTS) items shall be procured with typical configurations for the particular equipment and vendor lists shall be provided in accordance with DD Form 1423, CDRL, Data Item Number A012. Any standard warranties provided by the manufacturer will be afforded to the government.

3.4.7 Provide kitting and prefabrication services, which include equipment and system integration and testing in a laboratory or staging facility.

3.4.8 Provide the necessary facilities to prefabricate parts and components, assemble, stage and distribute material to the job site. All tooling required for prefabrication or installation shall be provided.

3.4.9 Provide for all aspects of prototype installations. The contractor shall perform the installation and provide feedback comments, input, marked-up technical information, marked-up drawings such that future installations will result in best value to the government in accordance with DD Form 1423, CDRL, Data Item Number A009.

3.4.10 Provide for all aspects of C4ISR equipment installations on watercraft and combatant craft. Installation and workmanship practices shall be in accordance with guidance documentation and the specific Delivery Order (DO). The contractor shall perform the installation, associated system testing, associated operator training, and provide associated ILS as directed on each DO. When necessary space modifications and auxiliary equipment modifications, overhauls, and installation may be required.

3.4.11 Provide overhaul, repair, and alteration services for various C4ISR equipment and systems such as navigation, sensors, and internal and external communications.

3.4.12 Provide on-site technical support in response to emergent requirements.

3.5 TASK E – INTEGRATED LOGISTICS SUPPORT

3.5.1 The contractor shall provide Integrated Logistics Support (ILS) for a variety of C4ISR programs and technology insertion projects. This support shall include the analysis, development, review, maintenance, and tracking of system and equipment logistics support planning, maintenance, training and documentation. The contractor shall participate in logistics associated conferences and meetings to present concerns, making recommendations and gathering additional data as required. Examples of meetings include:

a. Program Reviews
b. Integrated Logistics Management Team (ILSMT) Meetings
c. In-process Reviews (IPRs)
d. Quarterly Program Reviews (QPRs)
e. Technical Interface Meetings (TIMS)

3.5.1.1 Perform research, maintenance and update of the various C4ISR system Program Support Data (PSD) in the PSD Automated Reporting and Tracking System (PARTS) for the assigned hardware.

3.5.2 Provide engineering, technical and analytical support for all ILS disciplines and elements. Specific examples are listed below.

3.5.2.1 **Technical Data** - The contractor shall support the development, update, conversion, and/or review of Technical Manuals (TMs). The objective of this sub-task is to provide a more effective way of supporting the end user in the operation and maintenance of installed C4ISR equipment. To this end, the contractor shall suggest innovative ways to improve the development, delivery, and maintenance of such technical data products.

3.5.2.1.1 Support development of conventional hardcopy technical manuals, and development of Interactive Electronic Technical Manuals (IETMs) up to and including Level 4 in accordance with applicable Technical Manual

Contract Requirements (TMCR) and the Statement of Work (SOW) for the specific Delivery Order. Developed technical manuals shall be in accordance with the output format specified in the individual Delivery Order.

3.5.2.1.2 Support conversion of existing manuals or Commercial-Off-The-Shelf (COTS) manuals to electronic format and shall support the IETM Level and output format specified in the individual Delivery Order.

3.5.2.1.3 Support update of technical manuals as identified in Technical Manual Deficiency Reports (TMDRs), engineering changes, or other requirements as specified in the individual Delivery Order.

3.5.2.1.4 Support review of COTS technical manuals for accuracy and completeness to standards specified in the individual Delivery Order.

3.5.2.1.5 Support development and production of electronic or non-electronic media as specified in the SOW; which, media types include Hardcopy, CD-ROM, DVD-ROM, and ATIS compatibility. All media delivered shall be compatible with and executable by system hardware and operating systems as specified in the individual Delivery Order.

3.5.2.2 **Supply Support** - The contractor shall develop, review, update, and maintain complete supply support documentation.

3.5.2.2.1 Perform physical validation of boats and/or equipment to determine actual equipment configuration. Validation results shall conform to requirements as specified in the individual Delivery Order. Validation results will typically be in a format and data content sufficient to update the Ship's Configuration and Logistics Support Information System (SCLSIS) database via the Configuration Data Manager's Database – Open Architecture (CDMD-OA) interface, or as otherwise directed.

3.5.2.2.2 Develop, update, and maintain complete supply support documentation in the form of Provisioning Technical Documentation (PTD) and supporting data For Provisioning (DFP) packages. The Contractor shall maintain the resulting Allowance Parts Lists (APLs) or Allowance Equipage Lists (AELs) required due to hardware procurement, Design Change Notices (DCN), field change bulletins (FCB) or from other engineering or configuration changes. PTD packages shall be developed in accordance with applicable standards and/or instructions as identified in the individual Delivery Order.

3.5.2.2.3 Provide PTD in formats and media specified in the individual Delivery Order. ICAPS-CS is the recommended format; however, the Contractor may suggest a format equal to ICAPS.

3.5.2.2.4 Procure miscellaneous parts and equipment to support C4ISR equipment and installations.

3.5.2.3 **Maintenance Development and Support** - The contractor shall perform independent analysis and technical studies and provide engineering and technical services in the area of mission related maintenance engineering. Areas of particular involvement may include:

3.5.2.3.1 Perform Reliability, Availability and Maintainability (RAM) analysis and / or Trend analysis for C4SIR systems or equipment as specified in the individual Delivery Order.

3.5.2.3.2 Develop, review and / or update maintenance procedures in formats and to specifications described in the individual Delivery Order.

3.5.2.3.3 Review and update current analysis guides and maintenance assessment procedures and prepare new documents for in-service updates and new equipment as specified in the individual Delivery Order.

3.5.2.3.4 Review and update existing maintenance management and planning documents.

3.5.2.3.5 Research commercially available predictive/condition based diagnostics and applications that can be integrated with existing systems that will achieve new efficiencies in preventive and / or corrective maintenance and produce a positive ROI on lifecycle resource investment.

3.5.2.4 **Design Interface** – The contractor shall provide design interface and analysis in order to relate all design characteristics to system support characteristics. The interface may include the development of technical planning data, life cycle cost analysis and return on investment (ROI) studies.

3.5.2.5 **Training and Training Support** – The contractor shall develop processes, techniques and equipment as necessary to support training or training development for C4ISR equipment. The contractor shall provide operator and maintenance training support for installed C4ISR systems and technology upgrades. This task encompasses planning, analysis, coordination, development, review and maintenance of various C4ISR systems and associated interface systems. Specific support may include the development of training program plans, requirements and documentation via software (HTML) and hard copy, development and maintenance of Interactive Multi-media Instructional (IMI) materials as specified by the delivery order, this SOW and applicable CDRLs. IMI products delivered under this sub-task must be compliant with latest Navy standards and be fully compatible with web-based delivery. Training support shall include potential application of distributed modeling and simulation for training utilizing Distributed Interactive Simulation and/or DoD High Level Architecture (HLA) capable of modeling deployment activities for various platforms. This may include:

3.5.2.5.1 Development and /or update of Navy Training Support Plans (NTSPs).

3.5.2.5.2 Analysis of equipment for scope of training requirements.

3.5.2.5.3 Vendor interface for identification or procurement of training aids or assets.

3.5.2.5.4 Interface with commercial entities for evaluation and /or implementation of training courses.

3.5.2.6 **Manpower and Personnel** – The contractor shall evaluate systems or equipment in order to identify military or civilian personnel requirements with the skill levels and grades required to operate and support said system or equipment throughout it's service life in peacetime and wartime environments.

3.5.2.7 **Packaging, Handling, Storage and Transportation** – The contractor shall provide support to define and document the requirements, resources, processes, procedures, design considerations, environmental considerations, and methods necessary to ensure that all C4ISR systems, equipment, and support items are preserved, packaged, handled, and transported properly.

3.5.2.8 **Computer Resources Support** – The contractor shall provide support of the facilities, hardware, system software, software development and support tools, documentation, and other resources needed to operate and support C4ISR computer systems.

3.5.2.9 **Support Equipment** – The contractor shall provide support for the equipment (mobile or fixed) required to support the operation and maintenance of C4ISR systems and equipment. This includes associated multi-use end items, ground handling and maintenance equipment, tools, metrology and calibration equipment, and test equipment.

3.5.2.10 **Facilities** – The contractor shall provide support for any real property (structure, building, utility system, etc.) necessary to support a C4ISR System. This includes permanent, semi-permanent, or temporary real property assets required to support the system, including conducting studies to define facilities or facility improvements, locations, space needs, utilities, environmental requirements, and real estate requirements.

3.6 **CONTRACTOR FACILITIES -** The contractor shall have an office within one hour driving time of Gate 2 of the Norfolk Naval Base Norfolk, VA for liaison with appropriate officials and performance of work. The contractor shall identify the specific site to fully support the requirements for work intended by this contract. In satisfying this requirement, the contractor may consider teaming with other contractors having different facility

locations. The office facilities shall have the furnishings for a standard office space and conference room in support of expected number of personnel including:

a. ADP equipment compatible with Windows as the standard Network Operating System and MS Office 97 Professional as the standard office software. The use of Open Architecture Relational Data Base Management System and Web applications is required. The use of AutoCAD, Version 14.0 is required as a minimum.

b. FAX, copier, and telephone and other resources usually found in a functioning office environment.

3.6.1 The contractor shall have laboratory, functioning office, warehouse and shop facilities within one hour driving time from Gate 2 of the Norfolk Naval Base Norfolk, VA. The facilities shall include as a minimum:

a. Warehouse space of 10,000 square feet with a storage height of 20 feet and an entryway of 12 feet wide by 16 feet high and shall be secure, lockable, segregated, and clean with storage area for small and large items.

b. Laboratory space of 2,000 square feet
    1) HVAC environmentally controlled
    2) Power requirements of 240 VAC and 120 VAC, 60 cycle, with 80 amperes of service.

c. Inside machine shop of 4,000 square feet which will include the following equipment:
    1) Lathe
    2) Vertical Milling Machine
    3) Horizontal Milling Machine
    4) Shaper
    5) Radial Arm Saw and Drill

d. Sheet metal shop of 4,000 square feet which will include the following equipment:
    1) Pan/Box Brakes to 8 feet wide
    2) Power Shear to 8 feet wide
    3) Manual Shears to 4 feet wide
    4) CNC Cutting
    5) Welding Machines

e. Indoor production facility capable of accepting a trailered watercraft of up to 45 feet in length.

f. Electrical fabrication, repair, and overhaul facility of 5000 square feet which includes the following:
    1) Grounded and Electro Static Discharge (ESD) retarding workbenches
    2) Lighting of 10 candle power
    3) Sodier stations
    4) DC, 60 Hz and 400 Hz regulated power

3.6.2 The contractor shall have a facility in the San Diego area with in one hour driving time of the eastern side of the Coronado bridge capable of supporting technical and installation support services which include office space with an additional 5,000 square feet of an installation support facility of either staging area, fabrication shop, and/or warehousing space.

The requirement for maintaining these facilities shall not be construed to mean that the Government will be obligated to pay any direct costs in connection therewith. Further, the contractor shall not be entitled to any direct payment in connection with any personnel set in readiness at or brought into such facility in preparation or in exception of work to be performed under the contract. Payment for labor hours and materials will be made only for such hours and materials actually expended in performance under the contract.

3.7 TASK F – SYSTEM / EQUIPMENT CONFIGURATION MANAGEMENT

The contractor shall provide configuration management (CM) support on various C4ISR and Technology Insertion programs and/or projects. This support shall include all activities related to CM planning, baseline management, configuration identification, configuration audits, formal qualification review (FQRs), engineering changes, and configuration management records and reports.

3.7.1 The contractor shall provide support to various C4ISR requirements, programs and projects and associated interface system configuration management planning support to NSWCCDDN. The contractor shall review/develop applicable CM planning documentation and configuration management data.

3.7.2 The contractor shall provide CM program engineering, technical and analytical support to C4ISR programs and projects in accordance with a government approved Configuration Management Plan, which includes an organization structure with configuration control methods, configuration audits and configuration status accounting procedures for hardware and software. Efforts shall also include the review and evaluation of development/prime contractor configuration management programs and providing recommendation/comments.

3.7.3 The contractor shall monitor and maintain accurate records reflecting the current Configuration baselines of the various Cryptologic program, systems and/or projects and associated interface systems, subsystems, equipment, and software under-going development, enhancement, test and evaluation. The Contractor shall be responsible for life cycle management and shall include the functional, allocated, developmental, and product baselines.

3.7.4 The contractor shall develop, review, update and maintain configuration identification records for all C4ISR requirements, programs and/or projects and associated interface systems, equipment and software which include listing of unique hardware and software configuration items (CIs).

3.7.5 The contractor shall ensure that the functional and physical characteristic of each various C4ISR programs and/or projects or associated interface system configuration items match the characteristic specified by the applicable configuration identification.

3.7.6 The contractor shall provide engineering, technical and analytical support and project engineers in performance/conduct of program/project configuration audits and review.

3.7.7 The contractor shall evaluate all Engineering Change Proposals (ECPs) and Field Change Proposals (FCPs) for potential system and/or equipment CM impact. Upon approval of an ECP/FCP, the contractor shall incorporate engineering change data into the system configuration management data records.

3.7.8 The contractor shall establish update, maintain, and review CM records and generate the required CM reports.

4.0 QUALITY ASSURANCE (QA)

4.1 The contractor shall have and maintain a quality control program to support all efforts outlined in this SOW. The QC plan shall include how quality control will be accomplished for all phases of support.

4.2 The contractor shall have and maintain an in-house training and certification program to support all efforts outlined in this SOW. The training and certification plan shall include curriculum, testing, and the outline of the training and certification process. At a minimum, this should include the skilled trades in structural, mechanical and electrical disciplines.

4.3 The contractor shall have and maintain a software development process.

4.4 The contractor shall develop and maintain inspection procedures to document satisfactory workmanship in all documentation, integration and installations efforts.

6.0 MINIMUM PERSONNEL QUALIFICATIONS

6.1 The Contractor shall be responsible for employing technically qualified personnel to perform the tasks to be ordered hereunder. The Contractor shall maintain the personnel, organization, and administrative control necessary to ensure that the work delivered meets the contract specification requirements. The work history of each Contractor's employee must contain experience directly related to the task and functions intended to be performed under this contract.

6.2 The Government reserves the right, during the life of this contract, to request work histories on any contractor's employee for purposes of verifying compliance with this requirement. Personnel assigned to or utilized by the contractor in the performance of this contract shall, as a minimum, meet the experience, educational, or other background requirements set forth herein, and be fully capable of performing the contemplated functions of the respective labor categories in an efficient, reliable, and professional manner. If the Offeror does not identify the labor categories set forth in Section C below by the same specific title, than a cross-reference listing should be provided in the Offeror's proposal identifying the differences.

6.3 If the contracting officer questions the qualifications or competence of any person performing under the contract, the burden of proof to sustain that the person is qualified as prescribed herein shall be upon the contractor.

6.4 The following personnel are required in the performance of any task under this contract. Persons filling these positions must meet the following minimum educational/experience requirements:

1. Program Manager *: The Program Manager shall have a Bachelor's degree in engineering from an accredited college or university and a minimum of fifteen (15) years experience in the operation, maintenance, design, or testing of C4ISR systems and equipment of which ten (10) years must have been at the program management level. Experience with maintenance strategies and maintenance systems. Detailed knowledge of US Government organizations, their functions, and their responsibilities. A Master's degree may be used to substitute for five (5) years of experience.

2. Senior Project Engineer *: The Senior Project Engineer shall have a Bachelor's degree in engineering from an accredited college or university and have a minimum of fifteen (15) years experience in the operation, maintenance, and in-service testing of C4ISR equipment and systems directly related to the Statement of Work (SOW). The last five years of this experience must be directly related to the SOW. Demonstrated experience managing projects similar in scope, magnitude, and complexity, as those listed in the SOW is mandatory. This experience should include detailed knowledge of integrated condition assessment systems for shipboard equipment condition monitoring, including implementation and operation of computerized on-line diagnostic modules used with these systems.

3. Project Manager: A Master's degree from an accredited institution in a technical or managerial field plus a minimum of seven (7) years of combined general, related and specialized experience; or a Bachelor's degree from an accredited institution in a technical field or managerial field plus a minimum of ten (10) years of combined general, related, and specialized experience. This specialized experience may include a minimum of five (5) years of total experience as a successful manager of a team of skilled professional, technical and support personnel.

4. Senior Electrical Engineer: The Senior Electrical Engineer shall have a Bachelor's degree in electrical engineering from an accredited college or university and a minimum of ten years experience in the design, operation, maintenance or testing of C4ISR equipment and systems. Experience in the development of technical documentation utilizing military specifications and standards. Knowledge of US Government organizations, their functions and their responsibility and a minimum of three (3) years supervisory experience is required. A Master's degree may be used to substitute for five (5) years of experience.

5. Electrical Engineer: The Electrical Engineer shall have a Bachelor's degree in electrical engineering from an accredited college or university and a minimum of four (4) years experience in the design, operation, maintenance or testing of C4ISR equipment and systems. Experience in the development of technical documentation utilizing military specifications and standards.

6. Junior Electrical Engineer: The Junior Electrical Engineer shall have a Bachelor's degree in electrical engineering from an accredited college or university.

7. Senior Mechanical Engineer: The Senior Mechanical Engineer shall have a Bachelor's degree in mechanical engineering from an accredited college or university and a minimum of ten (10) years experience in the design, operation, maintenance, or testing of C4ISR equipment and/or supporting systems which can include HM&E systems. Experience in the development of technical documentation utilizing military specifications and standards. Knowledge of US Government organizations, their functions, and their responsibility and a minimum of three (3) years supervisory experience is required. A Master's degree may be used to substitute for five (5) years of experience.

8. Mechanical Engineer: The Mechanical Engineer shall have a Bachelor's degree in mechanical engineering from an accredited college or university and a minimum of four (4) years experience in the design, operation, maintenance or testing of C4ISR equipment and/or supporting systems which can include HM&E systems. Experience in the development of technical documentation utilizing military specifications and standards is desired.

9. Junior Mechanical Engineer: The Junior Mechanical Engineer shall have a Bachelor's degree in mechanical engineering from an accredited college or university.

10. Systems Analyst*: The Systems Analyst shall have a minimum of ten (10) years of experience in either C4ISR or HM&E equipment and systems. Experience in the development of technical documentation utilizing military specifications and standards is desired. Knowledge of US Government organizations, their functions, and their responsibility is required.

11. Senior Network Engineer: The Senior Network Engineer shall have a Bachelor's degree in Electrical or Computer Engineering, Computer Science, or other related field and a minimum of ten (10) years of relevant experience, including a sound familiarity with interface protocols. Must possess good oral and written communication skills for direct client interface. Knowledge and ability to establish system requirements; create architecture to support requirements; establish communications paths with system owners; develop test criteria; install equipment at designated site; perform operational tests on equipment and circuits is required. Experience in supporting both the acquisition and user communities to meet communications needs. A Master's degree may be used to substitute for five (5) years of experience.

12. Network Engineer: The Network Engineer shall have a Bachelor's degree in Electrical or Computer Engineering, Systems Engineering, Computer Science, or other related field and a minimum of two (2) years of relevant experience or current industry certificates (such as MSCE, CCNA, etc). Relevant experience will demonstrate a sound familiarity with interface protocols and equipment. Must possess good oral and written communication skills for direct client interface. Knowledge and ability to support the development of system requirements; create architecture to support requirements; establish communications paths with system owners; develop test criteria; install equipment at designated site; perform operational tests on equipment and circuits.

13. Junior Network Engineer: The Junior Network Engineer shall have a Bachelor's degree in Electrical or Computer Engineering, Systems Engineering, Computer Science, or other related field or current industry certificates (such as MSCE, CCNA, etc) and a minimum of one (1) year of relevant experience. Relevant experience will demonstrate a sound familiarity of networking equipment and systems.

14. Senior Computer Programmer: The Senior Computer Programmer shall have a Bachelor's degree in Electrical or Computer Engineering, Computer Science, or other related field and a minimum of ten (10) years of relevant experience, including a sound familiarity with programming techniques and various programming languages.

Demonstrated ability to provide technical guidance and skills in support of information systems development and integration efforts. Performs in a variety of technical areas including systems requirements analysis, data analysis and engineering, systems design, systems development, computer programming, systems testing and deployment, quality assurance, configuration management, and systems documentation. Provides technical and administrative support for information systems development tasks, including execution of technical tasks, the review of work products for correctness, adherence to the design concept and to user standards, and for progress in accordance with schedules. A Master's degree may be used to substitute for five (5) years of experience.

15. Computer Programmer: The Computer Programmer shall have a Bachelor's degree in Electrical or Computer Engineering, Systems Engineering, Computer Science, or other related field and a minimum of two (2) years of relevant experience or current industry certificates (such as MSCE, CCNA, etc). Experience must demonstrate the ability to prepare detailed specifications and computer software programs including integrating, testing, and debugging of software components.

16. Computer Scientist: The Computer Scientist shall have a Bachelor's degree in Computer Science or software engineering from an accredited college or university and ten (10) years experience in tasks directly related to the SOW. This experience must include five (5) years of machinery condition assessment and equipment condition monitoring, utilizing computerized, on-line diagnostic systems directly related to the SOW.

17. Senior Logistician: The Senior Logistician should have a Bachelor's degree from an accredited college or university or be a graduate of military schools which have provided an in-depth knowledge of naval shipboard systems maintenance and operation. Must demonstrate five (5) years experience in the development of Integrated Logistics Support of systems and equipment directly related to the SOW.

18. Logistician: The Logistician should have a high school diploma or be a graduate of military schools which have provided and in-depth knowledge of naval shipboard systems maintenance and operation. Must demonstrate five (5) years experience in the development of Integrated Logistics Support of systems and equipment directly related to the SOW.

19. Training Support Specialist: The Training Support Specialist must have a high school diploma or be a graduate of military schools, which have provided an in-depth knowledge of training techniques and curriculum development and must possess three (3) years of experience. Experience shall demonstrate the ability to gather, analyze, edit, and prepare system/course training information, conduct necessary research and ensure the use of proper systems and documentation standards, and evaluate curriculum requirements and user needs ensuring operational requirements are met.

20. Field Engineer*: The Field Engineer shall have a minimum of ten (10) years of general C4ISR experience which includes three (3) years of specialized C4ISR equipment or system experience. Experience must demonstrate the ability to troubleshoot, repair, test, and provide technical guidance on equipment and systems.

21. Electronics Technician III: An Associate's degree and a minimum of four (4) years experience in an appropriate technical discipline; or seven (7) years relevant technical experience. Demonstrated ability to apply technical expertise to solve complex problems that typically cannot be solved solely by referencing manufacturers' manuals. Performs such tasks as masking circuit analysis, calculating waveforms, and tracing relationships in signal flow. Uses complex test instruments such as high frequency pulse generators, frequency synthesizers, distortion analyzers, and complex computer control equipment.

22. Electronics Technician II: An Associate's degree and a minimum of two (2) years experience in an appropriate technical discipline; or five (5) years relevant technical experience. Requires familiarity with the inter-relationships of circuits and judgment in planning work sequence and selecting tools and testing instruments.

23. Electronics Technician I: High school graduate or GED with at least one (1) year relevant experience. Performs simple tasks such as replacing components, wiring circuits, repairing simple electronic equipment, and taking test readings using common instruments.

24. Quality Specialist: The Quality Specialist shall be a high school graduate with at least five (5) years of experience in developing and documenting production processes and procedures. Experience must demonstrate knowledge of and success in implementing military and commercial quality programs and directives.

25. Senior Technical Writer: The Technical Writer shall be a college graduate (Associates or Bachelors degree) and must have five (5) years experience in preparing and editing technical documents which include technical manuals, project plans, operational guides, etc. Experience must demonstrate at least three (3) years experience in use of computer graphics and publishing tools and software. An additional five (5) years of experience may be substituted for educational experience.

26. Technical Writer: The Technical Writer shall be a high school graduate or equivalent, must have three (3) years experience in preparing and editing technical documents which include technical manuals, project plans, operational guides, etc. Experience must demonstrate at least two (2) years experience in electronic systems documentation development.

27. Graphics Illustrator: The Graphics Illustrator shall be a high school graduate or equivalent, must have three (3) years of experience in preparing and editing graphics, pictures, and other forms of artwork. Experience must demonstrate at least two (2) years experience in use of computer graphics and publishing tools and software.

28. Draftsman: The Draftsman shall possess an Associate's degree and a minimum of two (2) years of experience or be a high school graduate and must have four (4) years of practical experience. Experience must demonstrate the development of drawings and/or illustrations, which include a demonstrated ability to utilize computer aided drawing software packages.

29. Word Processor: The Word Processor shall be a high school graduate or equivalent, must have three (3) years experience in word processing, data entry, formatting, and operation of word processing equipment, must have two (2) years experience in use of spreadsheet software and basic database setup, and must have formalized word processing software utilization.

30. Secretary: The Secretary shall be a high school graduate or equivalent with five (5) years experience and must be able to perform office work in support of the program.

31. Installation Mechanic: The Installation Mechanic shall be a high school graduate or equivalent with three (3) years experience in trade. Formal education can be substituted for an additional two (2) years of experience in trade.

32. Outside Machinist: The Outside Machinist shall be a high school graduate or equivalent with three (3) years experience in trade and skilled in the use of tools of the trade. Formal education can be substituted for an additional two (2) years of experience in trade.

33. Inside Machinist: The Inside Machinist shall be a high school graduate or equivalent with three (3) years experience in trade and skilled in the use of tools of the trade. Formal education can be substituted for an additional two (2) years of experience in trade.

34. Sheet Metal Mechanic: The Sheet Metal Mechanic shall be a high school graduate or equivalent with three (3) years experience in trade and skilled in the use of tools of the trade. Formal education can be substituted for an additional two (2) years of experience in trade.

35. Shipfitter/Pipefitter: The Shipfitter/Pipefitter shall be a high school graduate or equivalent with three (3) years experience in trade and skilled in the use of tools of the trade. Formal education can be substituted for an additional two (2) years of experience in trade.

36. Welder: The Welder shall be a high school graduate or equivalent with three (3) years experience in trade and skilled in the use of tools of the trade. Certifications for the types of welds to be performed must available for government review. Formal education can be substituted for an additional two (2) years of experience in trade.

37. Stockman/Laborer/Helper: The Stockman/Laborer/Helper does not require any education or work experience.

* - Denotes KEY personnel.

7.0 DELIVERABLES AND PERFORMANCE

A001	DI-MGMT-80368	STATUS REPORT	(MONTHLY STATUS REPORT)
A002	DI-MGMT-80368	STATUS REPORT	(CONTRACTOR LEADER MEETINGS AND STATUS REPORTS)
A003	DI-MGMT-80368	STATUS REPORT	(ALTERATION/REPAIR COMPLETION REPORT)
A004	DI-ILSS-80521	MATERIAL STATUS REPORT	
A005	DI-FNCL-80912	PERFORMANCE AND COST REPORT	
A006	DI-MISC-80711	SCIENTIFIC AND TECHNICAL REPORT	
A007	DI-ADMN-81373	PRESENTATION MATERIAL	
A008	DI-DRPR-81242	INSTALLATION CONTROL DRAWINGS	
A009	DI-SSES-81003B	COMMERCIAL DRAWINGS	
A010	DI-QCIC-81110	INSPECTION AND TEST PLAN	
A011	DI-NDTI-80603	TEST PROCEDURE	
A012	DI-MGMT-80894A	SOURCE/VENDOR LIST FOREIGN LIST	(COPIES OF PURCHASE ORDERS)
A013	DI-MGMT-80894A	SOURCE/VENDOR LIST FOREIGN LIST	(INDEX OF PURCHASE (ORDERS)
A014	DI-MISC-80678	CERTIFICATION/DATA REPORT	
A015	DI-SSES-81000B	PRODUCT DRAWINGS	

The basic Contract Data Requirements List (CDRL) requirements are provided in Exhibit A, attached hereto. Data requirements are to be tailored for each particular Delivery Order (DO). The CDRL requirements for each individual delivery order will be identified by the Government as a part of each delivery order and shall be a requirement of that particular task. If additional CDRLS are required for a specific task, the requirement and the appropriate Data Item Description (DID) will be provided as attachments to the DO.

8.0 GOVERNMENT FURNISHED INFORMATION

Any required Government Furnished Information will be provided as an attachment to the appropriate Delivery Order.

9.0 SECURITY

9.1 The Department of Defense Contract Security Classification, DD Form 254 included in Section J, itemizes the security classification requirements for this contract. The work to be performed under this contract shall involve access to, and handling of, classified material up to and including SECRET.

9.2 The contractor's facility in the Norfolk area shall be cleared for access of classified information up to and including Secret and authorized for storage of classified material up to and including Secret and be capable of obtaining a National Security Agency (NSA-approved) Communications Security (COMSEC) Material System (CMS) account for the receipt, issuance, and storage of COMSEC material.